reservoir, and a second reservoir connected to the first solid reservoir through a first connecting pipe, and connected to the pressure reactor through a second connector.--

IN THE ABSTRACT:

Please delete the present abstract and replace with the attached substitute abstract. 37 C.F.R. § 1.72(b).

IN THE DRAWINGS

Applicants submit a Request for Approval of Drawing Change concurrently with this Amendment. Subject to the Examiner's approval, Applicants respectfully request that Figure 14 in the above-captioned application be amended by deleting the symbol mark of reference character 211 "→" and inserting -- C --. This change is indicated in red on the copy of the originally filed drawings attached to the Request.

REMARKS

In the Office Action, the Examiner objected to the drawings as failing to comply with 37 C.F.R. §§ 1.84(p)(5) and 1.84(p)(4). The Examiner objected to the abstract "because of undue length and the use of legal phraseology." The Examiner also objected to the specification because "[o]n page 61, line 18, -- or object feeding -- should be inserted before 'pipe', as set forth in lines 13–14." The Examiner rejected claims 15–21 under 35 U.S.C. § 112, ¶ 2 as indefinite. The Examiner rejected claims 15–21 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,552,039 ("*McBrayer*"); rejected claims 15, 17, 19, and 20 under § 102(b) as anticipated by U.S. Patent 5,591,415 ("*Dassel*"); rejected claims 15–21 under § 103(a) as unpatentable over Japanese patent publication no. 09-085075 ("*Akira*") in view of *McBrayer*; and rejected

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claims 15–17 and 19–21 under § 103(a) as unpatentable over U.S. Patent 5,932,182 ("*Blaney*") in view of *McBrayer.*

Information Disclosure Statement

At the Examiner's request, Applicants concurrently submit an Information Disclosure Statement including English language translations of the following documents: (1) "Measurement and control of flow rate of powder," CHEMICAL ENGINEERING (1998) 62:379–80, and (2) "Kagakukogaku Kyokai," KAGAKUKOUGAKU BINRANI, Rev. 5th Ed. (1988) 870-71.

Amendment

Applicants have amended the specification and claims as indicated in the attached Appendix. Deletions are indicated by square brackets and insertions are indicated by underlining. Applicants amended the specification to clarify further the reference numerals in the figures and amended the claims to more particularly claim the invention. No new matter has been added.

Drawings

The Examiner objected to the drawings as "failing to comply with 37 C.F.R. § 1.84(p)(5) because they include . . . reference sign(s) not mentioned in the description." The Examiner identified Figures 1–4 and 13–15 containing reference sign "211," Figure 8 containing reference sign "125," and Figure 14 containing reference sign "212" as objectionable. Applicants have amended the specification to clarify further the reference signs identified relative to the figures. No new matter has been added.

The Examiner also objected to the drawings as "failing to comply with 37 C.F.R. § 1.84(p)(4) because the reference character '211' has been used to designate both an

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unspecified object labeled 'C' (FIGs. 1–4 and 13–15) and a 'circulation pump' (FIG. 14)," Applicants have amended Figure 14 in the concurrently filed Request for Approval of Drawing Change. Withdrawal of the objection is respectfully requested.

Specification

Applicants have amended the specification as requested by the Examiner purely to further prosecution and not in relation to any prior art reference. Withdrawal of the objection is respectfully requested.

Abstract

In the last Office Action, the Examiner objected to the Abstract. Applicants respectfully submit the attached substitute Abstract to further prosecution. Withdrawal of the objection is respectfully requested.

Rejection under § 112, ¶ 2

The Examiner rejected claims 15–21 under 35 U.S.C. § 112, ¶ 2 as indefinite. Applicants have amended these claims to more particularly claim the invention. Applicants believe the claims are definite as written and respectfully request withdrawal of the rejection.

Rejection under § 102(b)

The *McBrayer* reference

The Examiner rejected claims 15–21 under 35 U.S.C. § 102(b) as anticipated by *McBrayer*. Applicants respectfully traverse this rejection.

Claim 15 recites:

> A pressure treatment apparatus for processing a treatment object including a solid waste, comprising:
>
> a pressure reactor;

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> an exterior vessel in which the pressure reactor is installed through a gap, the exterior vessel being isolated from a treatment object and a reaction medium;
>
> means for feeding the treatment object including the solid waste into the pressure reactor;
>
> means for feeding the reaction medium into the pressure reactor; and
>
> means for controlling pressure within the gap between the exterior vessel and the pressure reactor to be higher than that within the pressure reactor.

McBrayer discloses a high pressure and high temperature reactor 10 for treating aqueous waste solutions. (*McBrayer*, abstract, col. 8, lines 57–59; col. 4, lines 12–14; Fig. 1.) Reactor 10 includes a reaction chamber 12, which is enclosed within a pressure vessel 22. (*Id.*, col. 9, lines 1–3; Fig. 1.) Reactor 10 also includes a feeding tube 30 (or 230) with a fluid exit 32 directed toward and impinging on the top chamber end 20 of reaction chamber 12 (*id.*, col. 9, lines 11–20; col. 15, lines 44–52; Fig. 1), so that reactor 10 produces a flow of fluids that comprise aqueous waste liquid and oxidant (*id.*, col. 9, lines 19–21; Fig. 1). A supplemental concentric tube 241, substantially concentric to feeding tube 230, may be used to introduce oxidant to the system. (*Id.* col. 13, lines 31–43; Fig. 4.) The reactor further includes an annulus pressure system including an inert gas pump, a first regulating valve 40, a flow meter 42, and a regulator 43, and may include an inert gas pump 44 including a pressure indicator 46 and a second regulating valve 48. (*Id.*, col. 9, lines 25–29; Fig. 1.) Also, an "inert fluid inlet may be used to introduce inert fluid to the annulus [24] to maintain a pressure higher than the pressure prevailing in the reaction zone." (*Id.*, col. 4, lines 48–50.)

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That is, although *McBrayer* discloses a reactor for treating aqueous waste solutions, it fails to disclose, *inter alia*, "*means for feeding the treatment object including the solid waste* into the pressure reactor," as recited in claim 15.

Because *McBrayer* fails to disclose each and every element of claim 15, claim 15 should be allowed over the reference. Similarly, claims 16–21 are likewise allowable at least because of their dependence from claim 15. Applicants respectfully request the withdrawal of the rejection of claims 15–21 over *McBrayer*.

The *Dassel* reference

The Examiner also rejected claims 15, 17, 19, and 20 under § 102(b) as anticipated by *Dassel*. Applicants respectfully traverse this rejection.

Dassel discloses a high pressure and high temperature reactor 10. (*Dassel*, col. 9, lines 36–40.) Reactor 10 includes a reaction chamber 12 surrounded by a pressure vessel 22 forming an annulus 24. (*Id.*, col. 10, lines 25–27; Fig. 1.) The reactor 10 further includes multiple reactant entries 26, 28, and 30 mounted on a head directly interfacing the reaction chamber 12 (*id.*, col. 10, lines 28–33; Fig. 1), as well as thermal insulators 32 and 34, and a chemical isolator including a valve 36 (*id.*, col. 10, lines 34–38), which prevents reactants, products of reaction, or effluent gases from entering the annulus 24 (*id.*, col. 10, line 67–col. 11, line 3). Reactor 10 provides for a positive pressure differential inside annulus 24 relative to reaction zone 13, which is inside reaction chamber 12. (*Id.*, col. 11, lines 14–17.) And fluid within annulus 24 escapes into transition zone 40 of reaction chamber 12. (*Id.*, col. 13, lines 11–43; Fig. 1.)

That is, *Dassel* fails to disclose, *inter alia*, "an exterior vessel in which the pressure reactor is installed through a gap, *the exterior vessel being isolated from a*

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treatment object and a reaction medium," "means for feeding the treatment object *including the solid waste* into the pressure reactor; [and] means for feeding the reaction medium into the pressure reactor," as recited in claim 15.

Because *Dassel* fails to disclose each and every element of claim 15, claim 15 should be allowed over the reference. Similarly, claims 17, 19, and 20 are likewise allowable at least because of their dependence from claim 15. Applicants respectfully request the withdrawal of the rejection of claims 15, 17, 19, and 20 over *Dassel*.

Rejection under § 103(a)

The *Akira* reference in view of the *McBrayer* reference

The Examiner rejected claims 15–21 under § 103(a) as unpatentable over *Akira* in view of *McBrayer*. The Examiner properly acknowledges *Akira* does not disclose "means for controlling pressure within the gap between the exterior vessel and the pressure reactor to be higher than that within the pressure reactor," as recited in claim 15, but asserts it discloses all other claim elements. Applicants respectfully traverse this rejection.

Akira discloses a high pressure reaction apparatus for treating fluid. (*Akira*, abstract; [0017].) The apparatus includes a reaction container 2, a pressure resistant container 1 surrounding but separated from reaction container 2 by an opening section B, which is filled with a high pressure fluid. (*Id.*, abstract; figure.) The opening section B pressure will increase if the pressure in the reaction container becomes high. (*Id.*, [0006].) A line is used between opening section B and the reaction container 2. (*Id.*, [0007].)

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That is, not only does *Akira* admittedly fail to disclose or suggest "means for controlling pressure within the gap between the exterior vessel and the pressure reactor to be higher than that within the pressure reactor," as recited in claim 15, but it also fails to disclose or suggest, "an exterior vessel . . . being isolated from a treatment object and a reaction medium," and" means for feeding the treatment object *including the solid waste* into the pressure reactor," also recited in claim 15.

Even if *McBrayer* and *Akira* were properly combinable, they would not disclose or suggest each element recited in claim 15. As noted above, *McBrayer* also fails to disclose or suggest at least, "*means for feeding the treatment object including the solid waste* into the pressure reactor." Consequently, there can also be no likelihood of success in obtaining the claimed combination. Absent such a disclosure or suggestion, the cited references cannot render claim 15 obvious.

Because *Akira* and *McBrayer* fail to render claim 15 obvious, claim 15 should be allowed over the references. Similarly, claims 16–21 are likewise allowable at least because of their dependence from claim 15. Applicants respectfully request the withdrawal of the rejection of claims 15–21 over *Akira* in view of *McBrayer*.

The *Blaney* reference in view of the *McBrayer* reference

The Examiner rejected claims 15–17 and 19–21 under § 103(a) as unpatentable over *Blaney* in view of *McBrayer*. The Examiner properly acknowledges *McBrayer* does not disclose "means for controlling pressure within the gap between the exterior vessel and the pressure reactor to be higher than that within the pressure reactor," as recited in claim 15, but asserts it discloses all other claim elements. Applicants respectfully traverse this rejection.

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Blaney discloses a reactor 11 for containing high pressure, high temperature, corrosive supercritical water reactions, e.g., aqueous organic waste such as pulp mill sludge, etc. (*Blaney*, abstract; col. 5, lines 12–13 and lines 39–42.) The reactor includes an outer vessel 12 and an inner reactor 10 each having inlets and outlets. (*Id.*, col. 5, lines 20–25; Figure 1.)

That is, not only does *Blaney* admittedly fail to disclose or suggest "means for controlling pressure within the gap between the exterior vessel and the pressure reactor to be higher than that within the pressure reactor," as recited in claim 15, but it also fails to disclose or suggest, "means for feeding the treatment object *including the solid waste* into the pressure reactor," also recited in claim 15.

Even if *McBrayer* and *Blaney* were properly combinable, they would not disclose or suggest each element recited in claim 15. As noted above, *McBrayer* fails to disclose or suggest at least, "*means for feeding the treatment object including the solid waste* into the pressure reactor." Consequently, there can also be no likelihood of success in obtaining the claimed combination. Absent such a disclosure or suggestion, the cited references cannot render claim 15 obvious.

Because *Blaney* and *McBrayer* fail to render claim 15 obvious, claim 15 should be allowed over the references. Similarly, claims 16–17 and 19–21 are likewise allowable at least because of their dependence from claim 15. Applicants respectfully request the withdrawal of the rejection of claims 15–17 and 19–21 over *Blaney* in view of *McBrayer*.

In view of the foregoing, Applicants respectfully request the reconsideration, reexamination, and timely allowance of the pending claims.

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Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: December 13, 2002

By: _____
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APPENDIX

Specification

Please amend the paragraph on page 35, lines 17–23 as follows:

Within the high-pressure reactor 200 and gap 202, water is fed by a pump 211 through the duct 212. The pressure sensors 231 and 232 measure the pressures of the waters. Based on the measured values, the pressure controller 215 maintains the pressure of the water within the gap 202 higher than that of the inside of the high-pressure reactor 200 by approximately 0.5 MPa to 5 MPa.

Please amend the paragraph on page 46, lines 8–16 as follows:

In the present embodiment, by installing the primary crusher 124, in addition to the effects obtained in embodiment 4, the solid in block can be fed to the high-pressure reactor. Further, when materials of low temperature brittleness are exposed to the primary crushing, a low temperature primary crusher 125 constituted of an adiabatic container 151 insulated by heat insulator, liquid nitrogen 152 and a primary crusher 124 can be effectively employed to crush the object.

Please amend the paragraph on page 54, lines 13–18 as follows:

In the present embodiment, air fed by the pump 211 is used as the fluid to fill the gap 202 between the high-pressure reactor 200 and exterior vessel 203. However, the fluid is not restricted to this but can be any one that can maintain the pressure of the gap 202 appropriately. For instance, various kinds of inert gases can be used.

Please amend the paragraph on page 58, lines 4-12 as follows:

In the water circulating line 205, water within the tank 207 is pressurized by the pump 211 to feed into the gap 202 through the duct 212. The pressure within the high-

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pressure reactor 200 and gap 202 are measured with the pressure sensors 231 and 232 and based on the measured values the pressure controller 215 controls the state of operation of the pump 211. Thereby, the pressure of the water within the gap 202 is held higher than that inside of the high-pressure reactor 200 by approximately 0.5 MPa to 5 MPa.

Please amend the paragraph on page 58, lines 13-19 as follows:

The water fed into the gap 202 is circulated through the duct 212 while being cooled by the cooling unit 206 of the water circulating line 205. Thereby, the temperature of the exterior vessel 203 can be held lower than that of the high-pressure reactor 200. For instance, in the case of the present embodiment, the exterior vessel 203 is preferable to be cooled for the temperature thereof to be approximately 100°C to 200°C.

Please amend the paragraph on page 61, lines 17-20 as follows:

To the high-pressure reactor 200, the coupling support 219, the waste feeding or object feeding pipe 145, the reaction medium feed pipe 309, the products exhaust pipe 402 and a pressure sensor 231 are fixed removable.

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Claims

15. (Amended) A [high-pressure] pressure treatment apparatus for processing a treatment object including a solid waste, comprising:

a [high-pressure] pressure reactor;

an exterior vessel in which the [high-pressure] pressure reactor is installed through a gap, the exterior vessel being isolated from a treatment object and a reaction medium;

means for feeding [a] the treatment object including the solid waste into the [high-pressure] pressure reactor;

means for feeding [a] the reaction medium into the [high-pressure] pressure reactor; and

means for controlling pressure within [a] the gap between the exterior vessel and the [high-pressure] pressure reactor to be higher than that within the [high-pressure] pressure reactor.

16. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15,

wherein the means for controlling pressure within the gap comprises a fluid feeder [of] for feeding a pressure holding fluid into the gap and a pressure controller for controlling pressure of the pressure holding fluid.

17. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15, further comprising [a] means for controlling temperature of the exterior vessel to be lower than that of the [high-pressure] pressure reactor.

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18. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15, wherein the exterior vessel [is consisting of] comprises a trunk portion and a cover portion that [can be opened and shut and] opens and shuts, the [high-pressure] pressure reactor [is] being fixed to be removable to the exterior vessel.

19. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15, wherein the [high-pressure] pressure reactor is formed of at least one selected from the group consisting of austenite stainless steel, Ni, Zr, Ti, Ta, Au, Pt, and alloys [of two kinds or more] thereof [, and alloys of at least one kind thereof].

20. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15, wherein an inner surface of the [high-pressure] pressure reactor is lined with at least one selected from the group consisting of austenite stainless steel, Ni, Zr, Ti, Ta, Au, Pt, alloys [of two kinds or more] thereof [, and alloys of at least one kind thereof].

21. (Amended) The [high-pressure] pressure treatment apparatus as set forth in claim 15, wherein an inner surface of the [high-pressure] pressure reactor is coated by ceramic material by thermally spraying.

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